

Application No. 10/810,887
Response dated July 21, 2006
Response to Office Action Dated March 21, 2006

REMARKS

By this amendment, claims 1, 6, 12, and 18 have been amended and claims 24-27 are new. Accordingly, claims 1-27 are currently pending in the application, of which claims 1, 6, 12, and 18 are independent claims.

Applicants respectfully submit that the above amendment does not add new matter to the application and are fully supported by the specification. In view of the above amendments and the following Remarks, Applicants respectfully request reconsideration and timely withdrawal of the pending objections and rejections for the reasons discussed below.

REJECTIONS OF CLAIMS 1, 2, 5-7, AND 10 UNDER 35 U.S.C. 103(a)

The Examiner has rejected claims 1, 2, 5-7 and 10 under 35 U.S.C. § 103(a) as being unpatentable over Yamakita et al. (U.S. Patent No. 6,661,491) in view of Sato (U.S. Patent No. 4,987,012). The Examiner states that Yamakita et al. teach all elements of the abovementioned claims, except that the spacers being black of claims 1 and 6, which the Examiner further states are taught primarily at column 4, lines 26-30 of Sato. Applicants traverse the rejection with respect to these claims.

Claim 1 of the present application, as amended, recites: "A liquid crystal display, comprising . . . spacers in the pixel region determining a gap between the upper and lower substrates; wherein liquid crystal molecules on both substrates are aligned antiparallel to each other, and the color of the spacers is black." (Emphasis added.)

Independent claim 1 of the present application patentably distinguishes over the combination of Yamakita and Sato for at least the foregoing reasons. Although Yamakita discloses an OCB mode LCD, the Examiner admits that Yamakita fails to teach black spacers. However, the Examiner alleges that Sato teaches black spacers and that it would have been obvious to apply black spacers in the Yamakita.

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In an OCB mode LCD, retardation films are used to enhance darkness in the black state. However, a complete black cannot be achieved due to light leakage around the spacers.

In the present invention, darkness of the black state of an OCB mode LCD is enhanced by using the black spacers. Claim 1 identifies the LCD as an OCB mode LCD by reciting "wherein liquid crystal molecules on both substrates are aligned antiparallel to each other", as described in paragraph [0042] of the specification as originally filed.

Sato discloses black spacers and Yamakita discloses an OCB mode LCD, but Sato and Yamakita do not disclose any teaching or suggestion about the use of black spacers in an OCB mode LCD. Therefore, it is respectfully submitted that any combination of Sato and Yamakita is an improper hindsight combination coached by the present invention.

Sato merely discloses that black particles may be formed by heat treating formed white particles and that both the white and black particles are particularly useful products as spacers for liquid crystal display devices. (See Abstract of Sato). There is no teaching, suggestion, or motivation in Sato to use a black spacer over a white spacer in an LCD display device, and certainly no teaching or suggestion to use a black spacer in an OCB mode LCD. Further, it is respectfully noted that Yamakita merely discloses a spacer (61) in FIG. 24 and does not teach or suggest any color thereof. Thus, it is respectfully submitted that the only basis for the motivation relied upon by the Examiner is in Applicants' disclosure, and that such motivation is not so common or well known in the art that the Examiner is entitled to opine that any person having ordinary skill in the art would have appreciated it.

Therefore, for at least the reasons discussed above, independent claims 1 and 6 of the present application patentably distinguish over the combination of Yamakita and Sato. Accordingly, it is respectfully requested that the rejection of independent claims 1 and 6 be withdrawn.

Claims 2 and 5 depend from independent claim 1 while claims 7 and 10 depend from

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independent claim 6 and are patentable for at least the reasons discussed above. Accordingly, it is respectfully requested that the rejections of claims 2, 5, 7 and 10 be withdrawn.

NEW CLAIMS 24-27

Furthermore, the subject matter presently identified in claims 1-23 has been amended to particularly point out and more clearly define over Yamakita et al. by adding new claims 24-27 depending from independent claims 1, 6, 12 and 18, respectively. The Examiner relies on Figures 3 and 24 of Yamakita et al., which disclose a spacer (61) in Fig. 24 between a protection film (62) or alignment layer (5) on a lower substrate (103) and an alignment layer (3) on an upper substrate (102). In contrast the present invention discloses in FIG. 2 and paragraphs [0025] and [0029] that the spacers 320 are in direct contact with the pixel electrode (190) of the TFT panel (100) and the common electrode (270) of the color filter panel (200).

In particular, neither Yamakita nor Sato, either alone or in combination, teach or suggest, wherein the spacers contact the common electrode and the pixel electrode, as in new claims 24-27.

REJECTIONS OF CLAIMS 3, 4, 8 AND 9 UNDER 35 U.S.C. 103(a)

On page 3 of the Office Action, the Examiner has also rejected claims 3, 4, 8 and 9 under 35 U.S.C. § 103(a) as being unpatentable over Yamakita et al. (U.S. Patent No. 6,661,491) in view of Sato (U.S. Patent No. 4,987,012) in view Motomura (U.S. Patent No. 6,103,323). The Examiner states that Yamakita and Sato disclose all elements of the abovementioned claims, except that the slow axis compensation film is not parallel to the transmittance axis of the polarizer of claims 3, 4, 8, and 9, which the Examiner further states is taught in Motomura at column 15, lines 10-15. Applicants traverse the rejection with

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respect to these claims.

Claims 3 and 4 depend from independent claim 1 and are patentable for at least the reasons discussed above that independent claim 1 patentably distinguishes over the references relied upon by the Examiner. Miller does not cure the deficiencies. Accordingly, it is respectfully requested that the rejections of claim 3 and 4 be withdrawn.

Claims 8 and 9 depend from independent claim 6 and are patentable for at least the reasons discussed above that independent claim 6 patentably distinguishes over the references relied upon by the Examiner. Accordingly, it is respectfully requested that the rejections of claims 8 and 9 be withdrawn.

REJECTION OF CLAIM 11 UNDER 35 U.S.C. 103(a)

On page 3 of the Office Action, the Examiner rejected claim 11 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Yamakita et al. (U.S. Patent No. 6,661,491) in view of Sato (U.S. Patent No. 4,987,012) and in further view of Bos (U.S. Patent No. 5,410,402). The Examiner states that Yamakita et al. and Sato disclose all elements of claim 11, except that a compensation layer has a smaller dispersion of birefringence than a liquid crystal layer of claim 11, which the Examiner further states is taught mainly at column 7, lines 46-65 of Bos. Applicants traverse the rejection with respect to this claim.

Claim 11 depends from independent claim 6 and is patentable for at least the reasons discussed above that independent claim 6 patentably distinguishes over the references relied upon by the Examiner. Bos does not the deficiency. Accordingly, it is respectfully requested that the rejections of claim 11 be withdrawn.

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REJECTIONS OF CLAIMS 12, 13, 16 18, 19 and 22 UNDER 35 U.S.C. 103(a)

On page 4 of the Office Action, the Examiner rejected claims 12, 13, 16, 18, 19 and 22 under 35 U.S.C. § 103(a) as being unpatentable over Yamakita et al. (U.S. Patent No. 6,661,491) in view of Sato (U.S. Patent No. 4,987,012) and further in view of Watanabe (U.S. Patent No. 5,617,228). The Examiner states that Yamakita et al. and Sato disclose all elements of claims 12, 13, 16, 18, 19 and 22, except for spacers positioned between upper and lower substrates and the number of spacers is less than 90 in one square millimeter, which the Examiner further states is taught mainly at column 13, line 65 – column 14, line 3 of Watanabe. Applicants traverse the rejection with respect to these claims.

Independent claims 12 and 18 of the present application, as amended, recite: “A liquid crystal display, comprising ... a liquid crystal layer injected between the upper substrate and the lower substrate, the alignment of the liquid crystal layer is OCB type; black spacers positioned between the upper substrate and the lower substrate ...” (Emphasis added.)

Independent claims 12 and 18 of the present application patentably distinguishes over the combination of Yamakita and Sato for at least the reasons discussed above with respect to claims 1 and 6. Watanabe does not cure the deficiency of Yamakita and Sato.

Therefore, for at least the reasons discussed above, independent claims 12 and 18 of the present application patentably distinguishes over the combination of Yamakita, Sato and Watanabe. Accordingly, it is respectfully requested that the rejection of independent claims 12 and 18 be withdrawn.

Claims 13 and 16 depend from independent claim 12 while dependent claims 19 and 22, and are patentable for at least the reasons discussed above. Accordingly, it is respectfully requested that the rejections of claims 13, 16, 19 and 22 be withdrawn.

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REJECTIONS OF CLAIMS 14 AND 15 UNDER 35 U.S.C. 103(a)

On page 5 of the Office Action, the Examiner rejected claims 14, 15, 20 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Yamakita et al. (U.S. Patent No. 6,661,491) in view of Sato (U.S. Patent No. 4,987,012) and further in view of Motomura (U.S. Patent No. 6,103,323). The Examiner states that Yamakita et al. and Sato disclose all elements of the abovementioned claims, except the angle of the slow axis of the compensation film and the transmittance of the polarizer is about 45 degrees of claims 14, 15, 20 and 21, which the Examiner further states is taught mainly in Motomura at column 15, lines 10-15. Applicants traverse the rejection with respect to these claims.

Claims 14 and 15 depend from independent claim 12 and are patentable for at least the reasons discussed above that independent claim 12 patentably distinguishes over the references relied upon by the Examiner. Motomura does not cure the deficiencies. Accordingly, it is respectfully requested that the rejections of claims 14 and 15 be withdrawn.

REJECTIONS OF CLAIMS 17 AND 23 UNDER 35 U.S.C. 103(a)

On page 5 of the Office Action, the Examiner has rejected claims 17 and 23 under 35 U.S.C. § 103(a) as being unpatentable over Yamakita et al. (U.S. Patent No. 6,661,491) in view of Sato (U.S. Patent No. 4,987,012) and Watanabe (U.S. Patent No. 5,617,228) and further in view of Bos (U.S. Patent 5,410,422). The Examiner states that Yamakita et al and Sato disclose all elements of claims 17 and 23, except that a compensation layer has a smaller dispersion of birefringence than a liquid crystal layer of claims 17 and 23, which the Examiner further states is taught mainly at column 7, lines 46-65 of Bos. Applicants traverse the rejection with respect to these claims.

Claim 17 depends from independent claim 12 and claim 23 depends from

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independent claim 18, both of which are patentable for at least the reasons discussed above
that independent claims 12 and 18 patentably distinguish over the references relied upon by
the Examiner. Neither Watanabe nor Bos cure this deficiency. Accordingly, it is respectfully
requested that the rejections of claims 17 and 23 be withdrawn.

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CONCLUSION

Applicants believe that a full and complete response has been made to the pending Final Office Action and respectfully submits that all of the stated objections and grounds for rejection have been overcome or rendered moot. Accordingly, Applicants respectfully submit that all pending claims are allowable and that the application is in condition for allowance.

Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact the Applicants' undersigned representative at the number below to expedite prosecution.

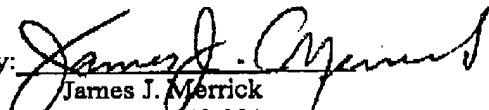
Prompt and favorable consideration of this Reply is respectfully requested.

It is not believed that any extensions of time are required. However, if extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned for under 37 C.F.R. §1.136(a). Applicants believe that no fees for net addition of claims are required at this time. Any fees required for extensions of time and any fees for the net addition of claims are hereby authorized to be charged to our Deposit Account No. 60-1130.

Respectfully submitted,

CANTOR COLBURN LLP

By:


James J. Merrick
Reg. No. 43,801
CANTOR COLBURN LLP
55 Griffin Road South
Bloomfield, CT 06002
Telephone (860) 286-2929
Facsimile (860) 286-0115
PTO Customer No. 23413

Date: July 21, 2006